

What is claimed is:

1. A device for the characterization of polymer molecules, comprising:
 - a substrate forming a base of the device, the substrate including an aperture therethrough;
 - a thin film disposed on the substrate and extending across the aperture so that the thin film is self supporting over an area defined by the aperture;
 - a channel through the thin film in the area defined by the aperture, wherein the channel is sized so as to allow passage of polymer molecules therethrough so that as a polymer molecule passes therethrough a given monomer will cause a detectable change in the thin film wherein the detectable change will characterize the monomer.